REQUIREMENTS
2021-2022 academic year, 1st semester

Name and code of the subject: Theory of measurement and experimental design, MTMEL7001A
Name and title of the person responsible for the subject: Dr. Endre Máthé, associate professor PhD
Additional instructors involved in teaching the subject: -
Name and level of the program: Food safety and quality engineering MSc
Subject type: compulsary
Teaching timetable of the subject, type of examination: 2 lect. + 2 pract., oral

Credit value of the subject: 5

Purpose of teaching the subject:
Successful food development and quality control is based on the proper application of theory of measurement and experimental design. The students will become familiar with the STEM (Science-Technology-Engineering-Mathematics)-specific professional culture specificities and values. They will also learn about the logics STEM-type of research including the formulation of questions, definition of research object, elaboration and documentation of research activities, analysis of results, formulating the right conclusions and all these things together in the context of food development, quality control and food chain supply.

Content of the subject (14 weeks):
LECTURES:
1. The STEM- specific professional culture and values.
2-3. The STEM type of observation and research logics. The direct and indirect proofs type of research data.
4-5. Research publications types and their content, scientific writing style, ethical considerations.
6-7. Measurement of fundamental and derived properties, data collecting and interpreting. Presenting numerical data. Dimensions, units and equations.
8-9. Macro- and microscopic measurements techniques: mass-, volume- and cell number determination.
10-11. Research planning and implementation: choosing the right object to study, sample size allocation and the statistic method, documentation of observations and hypothesis analysis.
12-13. Analysis of research data: descriptive statistics and correlation analysis; publication of numerical data.
14-15. Food industrial applications: development of novel food prototypes based on quantitative and qualitative parameters. The EFSA and FDA.

PRACTICALS:
1. STEM specific informatics databases
2-3. Elaboration of research plans for food prototype development and quality assessment.
4-5. Scientific presentations and publications preparation based on the theoretical considerations related to the quality control of a developed food prototype.
6-7. Measurements based on calculi.
8-9. Determination of volume, mass and cell number in laboratory conditions.
10-13. Statistical analysis, problem solving.
14-15. Presentation of food prototype/quality concepts and evaluation.

Type of mid-term examination: participation in the practicals is mandatory. Attendance at 70% of the practicals is mandatory. In case of absence, a report must be submitted by the student within two weeks from the missed practice (theoretical and practical description).
Participation in the practicals is a precondition for the final exam.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): practical grade

Teaching aids: lecture specific PPTs, research/review papers

Recommended literature:

• Adams, D.S. (2003). Lab Math. A handbook of measurements, calculations and other quantitative skills for use at bench. Cold Spring Laboratory Press. Cold Spring Harbour, New York. ISBN 0-87969-634-6.
• Davis, M. (1996). Scientific papers and presentations. Academic Press. San Diego, London. ISBN: 0-12-206370-8.
• Lazic, Z. (2004). Design of experiments in chemical engineering. A practical guide. WILEY-VCH Verlag Gmbh, Wienhelm
• Leedy, PD , Ormrod, JE (2015).Practical Research: Planning and Design, Enhanced Pearson eText -- Access Card (11th Edition). Pearson Ltd., ISBN-13: 978-0133747188
• Gratzer, W. (2002). Eurekas and Euphorias. The Oxford book of scientific anecdotes. Oxford University Press, Oxford. ISBN: 0-19-280403-0.

REQUIREMENTS
2021/2022. academic year I. semester

Name and code of the subject: Élelmiszertechnológiák minőségbiztosítási és biztonsági kérdései (HACCP a gyakorlatban) (Quality and safety of food technologies (HACCP in practice)), MTMEL7004A
Name and title of the person responsible for the subject: Dr. Nikolett Czipa, associated professor
Additional instructors involved in teaching the subject: Loránd Alexa, assistant lecturer
Name and level of the program: Food Safety and Quality Engineering MSc
Subject type: compulsory
Teaching timetable of the subject, type of examination: 2+1, examination
Credit value of the subject: 3

Purpose of teaching the subject: The main aim of the lectures is to know the hygiene requirements related to plant and animal origin food production, the structure of HACCP plan and the methodology of product description, manufacturing formula, hazard identification, hazard analysis, flow diagram preparation and corrective action determination. Until the end of the semester, student will be able to identify the physical, chemical and microbiological hazard in plant and animal origin food production, and they will be able to prepare a HACCP plan.

Content of the subject (14 weeks):

1. Food hygiene (Regulation No. 852/2004/EC); Hygiene of animal origin foods (Regulation No. 853/2004/EC)
2. Introduction to HACCP
3. HACCP handbook; HACCP plan
4. HACCP plan for packaging of natural mineral water
5. HACCP plan for packaging of honey and production of confectionary products
6. HACCP plan for production of quick-frozen products
7. HACCP plan for production of canned foods
8. HACCP plan for production of cereals and bakery products
9. HACCP plan for production of milk and dairy products 1.
10. HACCP plan for production of milk and dairy products 2.
11. HACCP plan for production of egg and egg products
12. HACCP plan for production of meat products 1.
13. HACCP plan for production of meat products 2.
14. HACCP plan for production of alcoholic beverages

Type of mid-term examination: Attendance in the case of practical courses is compulsory. The acceptable extent of absences is 3 practical courses / semester. The Students have one test in the session. At least 60% is required to satisfactory mark. If the Student fails to fulfil this we provide an occasion to repeat it in the educational period. Should the student fail this occasion as well, a new occasion must be offered until the end of the third week of the exam period to repeat the mid-term exam.
Criterion of signature: Active attendance on the practical courses and successful test.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): examination (individual project task)

Teaching aids: Slides of lectures

Recommended literature:

Nikolett Czipa (2017): Practical exercises for the course of food industry technologies and quality assurance. Debreceni Egyetem

2016/C 278/01 EU Commission notice on the implementation of food safety management systems covering prerequisite programs (PRPs) and procedures based on the HACCP principles, including the facilitation/flexibility of the implementation in certain food businesses

852/2004/EC regulation (2009): on the hygiene of foodstuffs

853/2004/EC regulation (2017): laying down specific hygiene rules for food of animal origin

Lelieved, H., Holah, J., Gabric, D.: (2016): Handbook of Hygiene Control in the Food Industry. ISBN: 978-0-08-100197

Codex Alimentarius Commission: Food hygiene. Basic texts. (http://www.fao.org/docrep/012/a1552e/a1552e00.pdf)

REQUIREMENTS
2021/22. academic year 1 nd semester

Name and code of the subject: Separation technique, MTMEL7003A
Name and title of the person responsible for the subject: Dr. János Elek, master instruktor
Additional instructors involved in teaching the subject: -
Name and level of the program: MSc in Food safety and quality engineer sciences, 1.
Subject type: compulsory
Teaching timetable of the subject, type of examination: 2 + 2, practice
Credit value of the subject: 5

Purpose of teaching the subject: Other methods for review of the knowledge of students: (ha vannak)**:** The participation on the lectures is required in 80%. The condition of the acceptance of the semester is the writing of three assays from the material of the lectures for acceptable level at the 5., 9. and 13.week of the semester. Lectures should not be replaced. One assay can be rewrite with the permission of the head of Department approved by the head of Educational Department of the Faculty at the last week of the semester. If the above conditions are not receiving, the semester is not accepted, and the student can not participate in the colloquium either
Content of the subject (14 weeks):

1. The formation of chromatographic methods, they importance in food analysis. Grouping by the mechanism of separation, the form of stationary, and the aggregate of mobile phase.
2. Interactions between the investigated components and the stationary phase.
3. The aim of the liquid chromatography, details of the liquid chromatographic procedures, analytical semi preparative and preparative chromatographic methods. The normal and reserve phase chromatography, the stationary and mobile phases.
4. Comparison of the normal and reverse phase chromatography. Determination of the vitamins, amino acids and proteins by NP- and RP-HPLC.
5. The basic principles of ion exchange chromatography. Analysis of amino acids and proteins by ion exchange chromatography.
6. The basic principles of gel chromatography, and the areas of applications.
7. The principles and aim of gas chromatography, and the details of gas chromatographic procedures.
8. Adsorption and repartition. Isotherm of adsorption. The basic principles of adsorption and repartition chromatography.
9. Parts of gas chromatography, the different columns and stationary phase, the importance of capillary column.
10. Areas of application of gas chromatography. Determination of the fatty acid composition of fats by gas chromatography.
11. The importance and structure of mass spectrometer. Different types of mass spectrometers. Details of the functioning of the quadrupole mass analyser.
12. Advantages of the mass spectrophotometers compared the other detectors.
13. Application of mass spectrometer in gas- and high performance liquid chromatography. Gas chromatography-Mass spectrometry coupled technique (GC-MS).
14. Liquid chromatography-Mass spectrometry coupled technique (HPLC-MS). Other coupled chromatographic techniques (GC-GC, HPLC-HPLC).

Type of mid-term examination:
Assignments to be submitted

Method of assessment (semester examination mark - report, practical grade, colloquium, examination):
70 % attendence and fulfilment of the tasks is compulsory for the signature. Final grad is deduced from results of mid-term accomplishments and the results of the final exam.

Teaching aids:
To be find in e-learning

Recommended literature:

1. Kovács B – Csapó J.: Modern methods of food analysis. ***University of Debrecen, Faculty of Agricultural and Food Science and Environmental Management.*** Készült a TÁMOP-4.1.1.C-12/1/KONV-2012-0014. projekt keretében. 1-205.
2. Sparkman, O.D. – Penton, Z.E.- Kitson, F.G.: Gas Chromatography and Mass Spectrometry. A Practical Guide. ***Elsevier.*** 2011. 1-590.
3. Ardrey, R.E.: Liquid Chromatography – Mass Spectrometry. ***Wiley.*** 2003. 1-298.
4. Naushad, M.U. – Khan, M.R.: Ultra Performance Liquid Chromatography Mass Spectrometry. Evaluation and Application in Food Analysis. ***CRC Press.*** 2014. 1-464.
5. Fanali, S.- Haddad, P. – Poole, C. – Schoenmaker, P. – Lloyd, D.: Liquid Chromatography. Fundamentals and Instrumentation. ***Elsevier.*** 2013. 1-517.

REQUIREMENTS
2021/2022. academic year I. semester

Name and code of the subject: Élelmiszerekkel szembeni elvárások, fogyasztóvédelem (Expectation to foodstuff, consumer production), MTMEL7002A
Name and title of the person responsible for the subject: Dr. Nikolett Czipa, associate professor
Additional instructors involved in teaching the subject: Loránd Alexa, assistant lecturer
Name and level of the program: Food Safety and Quality Engineering MSc
Subject type: compulsory
Teaching timetable of the subject, type of examination: 1+1, examination
Credit value of the subject: 3

Purpose of teaching the subject: The main aim of the lectures is to know the organisations, regulations and requirements which aims the production of safe food and consumer protection. Students will know the procedure of authorisation, the usage of applicable materials in food production, the requirements for trade in the EU and for import from third countries.

Content of the subject (14 weeks):

1. Introduction to food law (Regulation No. 178/2002/EC)
2. Labelling of foods
3. Geographical indicators, trade marks
4. Consumer perception of food quality and safety, vulnerable groups
5. Additives and treatments in food production
6. Special foods
7. Requirements for natural mineral water
8. Food trade in the EU
9. Border control for foods from third countries
10. Authorization of food business
11. Penalties
12. Small farmers food production
13. Catering and communal catering
14. Calculation of nutrition values

Type of mid-term examination: Attendance in the case of practical courses is compulsory. The acceptable extent of absences is 3 practical courses / semester. The Students have three tests in the session. At least 60% is required to satisfactory mark. If the Student fails to fulfil this we provide an occasion to repeat it in the educational period. Should the student fail this occasion as well, a new occasion must be offered until the end of the third week of the exam period to repeat the mid-term exam.
Criterion of signature: Active attendance on the practical courses.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): examination

Teaching aids: Slides of lectures

Recommended literature:

Nikolett Czipa (2017): Practical exercises for the course of expectation to foodstuff, consumer protection. Debreceni Egyetem
J.L. Pomeranz (2016): Food law for public health. Oxford University Press., New York.
J. Albert (2010): Innovations and food labelling. ISBN 978-1-84569-759-4
Regulaion, directives

REQUIREMENTS
2021/2022. tanév I. félév

A tantárgy neve, kódja: Élelmiszer logisztika (Food logistics), MTMEL7038A
A tantárgyfelelős neve, beosztása: Dr. Felföldi János, egyetemi docens
A tantárgy oktatásába bevont további oktatók: -
Szak neve, szintje: Food Quality and Safety Engineering MSc (Élelmiszerbiztonsági és -minőségi mérnöki MSc, angol)
Tantárgy típusa: szabadon választható
A tantárgy oktatási időterve, vizsga típusa: 1+2 K
A tantárgy kredit értéke: 4

A tárgy oktatásának célja: To get students acquainted with the theoretical and practical parts of logistics and their applications in the chain. Our aim is to introduce the basics of modern logistics based on the main functions and processes serving the goods flow. Students will be able to evaluate and discuss specific cases using their knowledge gained about theory on lectures.

A tantárgy tartalma (14 hét bontásban): **Course content, topics:**

1. Introduction to supply chain and logistics management
2. Food supply chains
3. Logistics
4. Retailing
5. Production and Manufacturing
6. Sourcing and procurement
7. Technology trends in supply chains
8. Risk management
9. Regulation, safety and quality
10. Collaboration and relationship
11. Security and future challenges
12. Challenges in international supply chains
13. Supply chain and logistics performance
14. Sustainability in supply chains

Évközi ellenőrzés módja: Requirements that must be met by each student within the semester and are specified and communicated by the course master are definitely related to the topics discussed in the course. Terms of course completion is giving the presentations by each student.

Számonkérés módja (*félévi vizsgajegy kialakításának módja – beszámoló, gyakorlati jegy, kollokvium, szigorlat*): Final grade results in a grade from 1 to 5 which grade will be calculated as a combined one with those results coming from the performances (presentations) over the semester.

Oktatási segédanyagok: ppt presentations

Ajánlott irodalom:
Dani, S. (2015): Food supply chain management and logistics. pp 260, KoganPage, ISBN: 9780 7494 7364 8
Deloitte (2013): The food value chain: a challenge for the next century. Deloitte Touche Tohmatsu, London.

REQUIREMENTS
2021-2022 academic year, 1st semester

Name and code of the subject: Experimental design, MTBE7041A
Name and title of the person responsible for the subject: Dr. Endre Máthé, associate professor PhD
Additional instructors involved in teaching the subject: -
Name and level of the program: Food safety and quality engineering MSc
Subject type: optional
Teaching timetable of the subject, type of examination: 2 lect. + 2 pract., oral

Credit value of the subject: 3

Purpose of teaching the subject:
The basis of successful food development is the correctly applied experimental design, which is based on the "STEM" (Science-Technology-Engineering-Mathematics)-specific professional education and values. The logical system of "STEM" type research is reviewed, emphasizing the coherence between questioning and the experimental model, and the importance of evaluating the implementation of experiments. The peculiarities of "STEM" type verbal and nonverbal communication are being presented.

Content of the subject (14 weeks):
LECTURES:
1-2. The STEM- specific professional culture and values.
3-4. Research planning and implementation: choosing the right object to study, sample size allocation and the statistical methods, documentation of observations and hypothesis analysis.
5-6. The STEM type of observation and research logics. The direct and indirect proofs type of research data.
7-8. Data collecting and interpreting. Analysis of research data: descriptive statistics and correlation analysis; publication of numerical data.
9-11. Research publications types and their content, scientific writing style and ethical considerations.
12-14. Trends of food development. The role of preventive and therapeutic nutrition in food development.

PRACTICALS:
1-2. STEM specific informatics databases
3-4. Elaboration of research plans for food prototype development based on technological considerations and personalized nutrition.
5-8. Preparation and discussion of scientific presentations and publications based on theoretical considerations.
9-11. Visiting the main research and food development facilities of the faculty.
12-14. Discussions on the topics of the final research project.

Type of mid-term examination: participation in the practicals is mandatory. Attendance at 70% of the practicals is mandatory. In case of absence, a report must be submitted by the student within two weeks from the missed practice (theoretical and practical description).
Participation in the practicals is a precondition for the final exam.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): practical grade

Teaching aids: lecture specific PPTs, research/review papers

Recommended literature:

• Adams, D.S. (2003). Lab Math. A handbook of measurements, calculations and other quantitative skills for use at bench. Cold Spring Laboratory Press. Cold Spring Harbour, New York. ISBN 0-87969-634-6.
• Davis, M. (1996). Scientific papers and presentations. Academic Press. San Diego, London. ISBN: 0-12-206370-8.
• Lazic, Z. (2004). Design of experiments in chemical engineering. A practical guide. WILEY-VCH Verlag Gmbh, Wienhelm
• Leedy, PD , Ormrod, JE (2015).Practical Research: Planning and Design, Enhanced Pearson eText -- Access Card (11th Edition). Pearson Ltd., ISBN-13: 978-0133747188
• Gratzer, W. (2002). Eurekas and Euphorias. The Oxford book of scientific anecdotes. Oxford University Press, Oxford. ISBN: 0-19-280403-0.

REQUIREMENTS
2021/2022 academic year I. semester

Name and code of the subject: Quality management systems and audit in the food chain. MTMEL7016A
Name and title of the person responsible for the subject: Dr. Ferenc Peles, assistant professor
Additional instructors involved in teaching the subject: -
Name and level of the program: food safety and quality engineering MSc
Subject type: obligatory
Teaching timetable of the subject, type of examination: 2+2 C
Credit value of the subject: 4

Purpose of teaching the subject: The aim of the subject is the introduction of the standards, furthermore the development, operation and certification of the quality, environmental and food safety systems.

Content of the subject (14 weeks):

1. Introduction. Definitions.
2. Evolution of quality management
3. GMP
4. GHP
5. GAP
6. GLOBALGAP
7. HACCP
8. ISO 9001
9. ISO 14001
10. ISO 22000
11. GFSI, FSSC 22000
12. BRC Global Standard for Food Safety
13. IFS Food Standard
14. Auditing of management systems

Type of mid-term examination: mid-year written exams

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids: PPT slides

Recommended literature:
Peles, F. – Juhász, Cs. (2014): Quality assurance. University lecture notes. University of Debrecen. /ISBN 978-963-473-656-1/ TÁMOP 4.1.2.A/1-11/1-2011-0009. 177p.
Vasconcellos, J.A. (2004): Quality Assurance for the Food Industry. A Practical Approach. CRC Press. 448 p.
Jacxsens, L. – Devlieghere, F. – Uyttendaele, M. (2009): Quality Management Systems in the Food Industry. Ghent University. 153p..

REQUIREMENTS
2021/2022 academic year I. semester

Name and code of the subject: Traceability in the food chain. MTMEL7017A
Name and title of the person responsible for the subject: Dr. Ferenc Peles, assistant professor
Additional instructors involved in teaching the subject: -
Name and level of the program: food safety and quality engineering MSc
Subject type: obligatory
Teaching timetable of the subject, type of examination: 1+1 C
Credit value of the subject: 3

Purpose of teaching the subject: The purpose of this subject is to familiarize the student with the concepts, basics and objectives of traceability, regulations and standards related to traceability, furthermore the tracing and tracking techniques in practice.

Content of the subject (14 weeks):

1. Introduction. Definitions.
2. The relationship between the food chain safety and traceability
3. Aims, significance and benefits of traceability
4. Types of tracing procedures and their characteristics
5. Regulations and standards related to food traceability
6. Follow-up systems in case of plant origin foods
7. Follow-up systems in case of animal origin foods
8. TIR and ENAR system
9. GS1 system
10. GS1 standards
11. Types of bar codes and their characteristics.
12. RFID system
13. Application of RFID technology in traceability
14. Design and implementation of a traceability system

Type of mid-term examination: mid-year written exams

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids: PPT slides

Recommended literature:
Schiffers, B. (2011): Traceability. COLEACP-PIP programme, training manual 2. 118 p.
Regulation (Ec) No 178/2002 of The European Parliament and of The Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety
Commission Implementing Regulation (EU) No 931/2011 of 19 September 2011 on the traceability requirements set by Regulation (EC) No 178/2002 of the European Parliament and of the Council for food of animal origin
ISO 22005:2007. Traceability in the feed and food chain. General principles and basic requirements for system design and implementation.

REQUIREMENTS
2021/2022 academic year 1 semester

Name and code of the subject: Élelmiszer marketing (Food Marketing) MTMEL7005
Name and title of the person responsible for the subject: Dr. András Fehér
Additional instructors involved in teaching the subject: -
Name and level of the program: Food safety and quality engineer sciences (Master)
Subject type: compulsory
Teaching timetable of the subject, type of examination: 2+1 K
Credit value of the subject: 3

Purpose of teaching the subject: The goal of the subject is to make the student understand the basic contexts of the food marketing especially the segmentation, the targeting and positioning. The subject emphasizes the role of the marketing mix in the food markets therefore we study the product, the price, the place and promotion tools detailed. The community marketing tools and strategies are also part of the subject.

Content of the subject (14 weeks):

Lecture topics:

1. Coordination of the requirements
2. Evolution of food marketing system – part 1.
3. Evolution of food marketing system – part 2.
4. Segmentation and new product development (from concept to shop), STP, product, price, place and promotion – part 1.
5. Segmentation and new product development (from concept to shop), STP, product, price, place and promotion – part 2.
6. Food consumption trends – part 1.
7. Food consumption trends – part 2.
8. Regional food systems – part 1.
9. Regional food systems – part 2.
10. Retailers strategies in fresh produce (case study: Short supply chains) – part 1.
11. Retailers strategies in fresh produce (case study: Short supply chains) – part 2.
12. Overview of a specific products' market (free from products) – part 1.
13. Overview of a specific products' market (free from products) – part 1.
14. Final presentation / semester summary

Practice topics

1. Coordination of the requirements
2. Evolution of marketing systems – Coca-Cola, the prime example of marketing – Case study analysis
3. Evolution of marketing systems – Coca-Cola, the prime example of marketing – Case study presentation
4. Segmentation and new product development – Red Bull, the brand getting wings – Case study analysis
5. Segmentation and new product development – Red Bull, the brand getting wings – Case study presentation
6. Food consumption trends – The characteristic of digital food consumer – Case study analysis

7. Food consumption trends – The characteristic of digital food consumer – Case study presentation
8. Regional food systems –Gedeon Totth – International practice of community agricultural marketing – Case study analysis
9. Regional food systems –Gedeon Totth – International practice of community agricultural marketing – Case study presentation
10. Retailer's strategies in fresh produce – Tesco, the world-class customer contact builder – Case study analysis
11. Retailer's strategies in fresh produce – Tesco, the world-class customer contact builder – Case study presentation
12. Overview of specific products' market –The story of delicious gluten free bread: the branding of Glulu – Case study analysis
13. Overview of specific products' market –The story of delicious gluten free bread: the branding of Glulu – Case study presentation
14. The student present the final presentation.

Type of mid-term examination: -

Method of assessment (semester examination mark - report, practical grade, colloquium, examination):
Students must process a case study in the field of food marketing by the end of the semester by an oral presentation. Students must complete a written exam at the end of the semester.

The presentation and the written exam will be evaluated together.

Students can earn 100 points during the semester. The presentation is 50% (50 points), with 50% (50 points) for written exam. Students must also meet the minimum level for presentation and written exam, so they need to reach 51% of the points. During the semester students can earn extra points through active participation in the lessons.

Presentation (50% of the final 100 points): During the oral presentation, students should be given 10 minutes of lectures and they will be present it in one of the last lessons.

Written exam (50% of the final 100 points): The written exam consists of five sections (multiple choices (10 points), true or false (10 points) and three short essays (3*10 points). Students will write the exam during the exam period or pre-exam with the appropriate progress of the semester.

Teaching aids: Collection of case studies

Recommended literature:

1. Rachel E. Helwig (2015): Transparent Food Marketing: A Clear Understanding of Food Marketing Terminology. CreateSpace Independent Publishing Platform; First edition. pp. 1-112 ISBN: 9781514869864
2. Stephen F. Hall (2015): Sell Your Specialty Food: Market, Distribute, and Profit from Your Kitchen Creation. Stephen F. Hall; 6th edition. pp. 1-210. ISBN: 9780692572078
3. Gordon W. Fuller (2011): New Food Product Development: From Concept to Marketplace, Third Edition. CRC Press; 3 edition. pp. 1-508. ISBN: 9781439818640

REQUIREMENTS
2021/22 academic year 1. semester

Name and code of the subject: Vezetési és kommunikációs ismeretek MTMEL7007A
Name and title of the person responsible for the subject: Dr. habil JUHÁSZ, Csilla
Associate professor
Additional instructors involved in teaching the subject: -
Name and level of the program: Food safety and quality ensurance engineer MSc
Subject type: compulsory
Teaching timetable of the subject, type of examination: 1+1 E
Credit value of the subject: 3

Purpose of teaching the subject: Let students recognize those basic management theorises, methods, proceedings and communication technics, which helps to practice effective managerial tasks.

Content of the subject (14 weeks):

1. Basic communication
2. Nonverbal communication
3. Verbal communication, written
4. Verbal communication, oral
5. Communicational barriers
6. Management and organizational communication
7. Business communication
8. Management vs leadership
9. Managenet schools
10. Managerial tasks
11. Management styles and methods
12. Organisation forms
13. Motivation
14. Conflict and conflict handling

Type of mid-term examination:
Attendance is required. Students are required to complete any homework and necessary preparation for the lessons as requested by the teacher.
To get the credits students have to fulfil the requirements of both the lectures and the seminars and sit for a written exam at the end of the semester. The final grade is calculated on the basis of the written examination and the seminar performance. If either the written examination or the seminar performance is a failing grade i.e. 1, the final grade will automatically becomes a fail i.e.1. The calculation is the following: <60% – 1; 61% – 2; 71% – 3; 81% – 4; 91%– 5.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): EXAMINATION

Teaching aids: The slides of lecture

Recommended literature:

Guffey, Mary Ellen – Loewy, Dana: Essential of Business Communication.
http://www.cengagebrain.com.mx/content/9781133991465.pdf
Allan Pease: Bodylanguage
McLean, S. (2005). The basics of interpersonal communication. Boston, MA: Allyn & Bacon
Pearson, J., & Nelson, P. (2000). An introduction to human communication: Understanding and sharing. Boston, MA: McGraw-Hill
Ricky Griffin. (11ed.): Management
Richard. L. Daft: management. 9th ed.
C.K. Prahalad: The fortune at the bottom of the pyramid.
Earl Babbie: The practice of social research.
Jared Diamond: Collapse.How societies choose to fail or succed.

REQUIREMENTS
2021/2022 academic year I semester

Name and code of the subject: Regulation of food production, quality and safety MTMEL7013A
Name and title of the person responsible for the subject: Dr Andorkó Imre PhD senior lecturer
Additional instructors involved in teaching the subject:
Name and level of the program: Agricultural Engineer BSc
Subject type: exam
Teaching timetable of the subject, type of examination: 3+0 (lecture and practice)
Credit value of the subject: 3

Purpose of teaching the subject:
In this course, students will get any basic legal knowledge. They will get an overview of the past and present of the legal regulation on food law. The students will be able to understand and use the special legal term of food law. The students will gain an overview of the legal concepts relevant to the control and administration of the food industry. The students will be able to understand the purposes and background of food law, both domestic and EU.

Content of the subject (14 weeks):

1. Prelude, basic concepts of law, hierarchy of the legal system, legislators.
2. The history of legal regulation on food production
3. The European Union I. – a historical and institutional overview
4. The European Union II. - The legal system of the European Union, the primacy of European Union law
5. The general principles and requirements of EU food law - Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 Januar y2002 laying down, establishing the European Food Safety Authority and laying down procedures in matters of food safety
6. The European Food Safety Authority (EFSA)
7. RASFF - Food and Feed Safety Alerts
8. EU 852/2004 -: Regulation on Hygiene of food stuffs
9. The HACCP system
10. The regulation No 2160/2003 of the European Parliament and of the Council on the control of salmonella and other specified food-borne zoonotic agents
11. United States Food Laws and Regulations.
12. The Hungarian national legal regulation on food safety.
13. National Food Chain Safety Office.
14. The Fundamentals of Labour Law in Hungary.

Type of mid-term examination:
Attendance at lectures is compulsory.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids:
Show the legal regulation and institutions of food safety in the EU and in Hungary as well.

Recommended literature:

1. Bernd van der Meulen, Irene Scholten-Verheijen, Theo Appelhof, and Ronald van den Heuvel: Roadmap to EU Food Law, Eleven International Publishing, 2011. ISBN 978-94-90947-26-2

2. Bernd van der MEULEN: EU Food Law Handbook, Wageningen Academic Publishers Books, 2012. ISBN 978-90-8686-246-7

3. Bernd M.J. van der Meulen: Private food law. Governing food chains through contract law, self-regulation, private standards, audits and certification schemes. European Institute for Food Law series, Volume 6, Wageningen Academic Publishers Books, 2011. ISBN: 978-90-8686-176-7

4. Jens Hartig Danielsen: EU Agricultural Law, Wolters Kluwer, Holland, 2013. ISBN: 9789041132802

REQUIREMENTS
2021/22 academic year I. semester

Name and code of the subject: Hyphenated analytical methods, MTMEL7015A
Name and title of the person responsible for the subject: Dr. Béni Áron, assistant professor
Additional instructors involved in teaching the subject: -
Name and level of the program: Food Safety and Quality Engineering MSc
Subject type: lecture and laboratory practice
Teaching timetable of the subject, type of examination: 1+1 C
Credit value of the subject: 3

Purpose of teaching the subject:
The task of the subject is: the students get acquainted with the grouping and applicability of the most important attached analytical systems. The students will get a detailed educational material (theoretical and practical knowledge) for the most important attached analytical systems (HPLC–UV/VIS and HPLC–DAD, HPLC–ICP-MS, LC-MS, GC-MS). It will detail the importance and process of the speciation analytics, moreover it will give specific examples for application of an attached analytical system.

Content of the subject (14 weeks):

The topics of the lectures:

1. week: grouping of the attached techniques.
2-3. weeks: application possibilities of HPLC–UV/VIS and HPLC–DAD systems
4-5. weeks: separation and detection possibilities of elemental speciation analytical methods (HPLC–ICP-OES, HPLC–ICP-MS, moreover non-chromatographic analytical methods)
6. week: advantages and disadvantages of different elemental speciation analytical methods
7-8. weeks: sampling and sample preparation methods for elemental speciation analytical methods
9. week: application possibilities of a liquid chromatograph mass spectrometer (LC-MS)
10. week: application possibilities of gas chromatograph mass spectrometer (GC-MS)
11. week: introduction and possibilities of analytical techniques of arsenic species
12. week: introduction and possibilities of analytical techniques of selenium species
13. week: introduction and possibilities of analytical techniques of mercury species
14. week: introduction and possibilities of analytical techniques for species of other elements

The topics of laboratory exercises:

1. week: education of prevention of accidents, introduction of laboratory order and each laboratory exercises
2-3. weeks: sampling and sample preparation methods of food raw materials and food productions for elemental speciation analyses
4-5. weeks: sampling and sample preparation methods of food raw materials and food productions for determination of organic compounds
6-8. weeks: analysis of chromium(III) and chromium(VI) species contents in the previously prepared samples of food raw material and food production using aluminium-oxide micro column and inductively coupled plasma optical emission spectrometer (MC–ICP-OES).
9-11. weeks: analysis of selenium(IV) and selenium(VI) species contents in the previously

prepared samples of food raw material and food production using ion chromatograph and inductively coupled plasma mass spectrometer (IC–ICP-MS).

12-14. weeks: identification and analysis of contents of various organic compounds in the previously prepared samples of food raw material and food production using gas chromatograph–mass spectrometer

Type of mid-term examination:
Have to write one test, it must reach above 50% of points.
Attendance at the practice is mandatory

Method of assessment (semester examination mark - report, practical grade, colloquium, examination):

After the successfully written test, the oral exam is available.

The percentage of the points conversion to grades:

80 – 100 5
70 – 79 4
60 – 69 3
50 – 59 2
0 – 49 not accepted (1)

Teaching aids:
Dr. Áron Béni E-learning Hyphenated analytical methods

Dr. Áron Béni Practical Exercises for the Course of Hyphenated Analytical Techniques

Dr. Rita Erdeiné Kremper Practical Exercises for the Course of Genearal and Inorganic Chemistry

Recommended literature:
1. Cornelis, R., Crews, H., Caruso, J., Heumann, K. 2003. Handbook of Elemental Speciation: Techniques and Methodology John Wiley & Sons, Ltd. ISBN: 0-471-49214-0
2. Cornelis, R., Crews, H., Caruso, J., Heumann, K (editor) 2005. Handbook of Elemental Speciation II: Species in the Environment, Food, Medicine & Occupational Health. John Wiley & Sons, Ltd. ISBN: 0-470-85598-3 (HB)
3. Ure, A.M., Davidson, C.M. 2002. Chemical Speciation in the Environment, Blackwell Science Ltd. ISBN 0-632-05848-X
4. Joanna Szpunar, J., Lobinski, R. (Editors) 2003. Hyphenated Techniques in Speciation Analysis. The Royal Society of Chemistry. Cambridge, UK. 252 p. ISBN: 978-0-85404-545-7
5. Ruth Waddell, Cris Lewis, Wei Hang, Chris Hassell and Vahid Majidi: (2005) Inductively Coupled Plasma Mass Spectrometry for Elemental Speciation: Applications in the New Millennium. Applied Spectroscopy Reviews, 40:33–69.

REQUIREMENTS
2021/2022. academic year I. semester

Name and code of the subject: Medicinal plants and their processing, MTMEL7025A
Name and title of the person responsible for the subject: Dr. Erika Tünde Kutasy, assistant professor
Additional instructors involved in teaching the subject:
Name and level of the program: Food Safety and Quality, MSc
Subject type: compulsory
Teaching timetable of the subject, type of examination: 1+2 C
Credit value of the subject: 3

Purpose of teaching the subject:
The aim of the course is to give informations about the significance of medicinal and aromatic plants production in Hungary and in the world. Uses of medicinal plants. Classification of medicinal plants. Active ingredients of medicinal plants. Quality assurance of drugs. The production technologies of the most important herb species in Hungary. Wild collection of medicinal plants. The most important wild-harvested herbs in Hungary. Primary processing of medicinal and aromatic plants.

Content of the subject (14 weeks):
1. Medical plant production in Hungary and in the world. Agroecological conditions of production. Drugs and their systematization.
2. Genetical background of medical and spice crops farming. Gathering of medical plants.
3. General and specific methods of production technology of medicine and aromatic plants.
4. Possibilities and practice of aromatic plant production in organic farming.
5. Processing and storing of medical and aromatic crops, extraction of active substances.
6. Qualifying of herbs.
7. Production of annual herbs: (Claviceps purpurea, Coriandrum sativum, Anethum graveolens, Carum carvi).
8. Majorana hortensis, Pimpinella anisum, Ocimum basilicum production
9. Satureja hortensis, Matricaria chamomilla, Calendula officinalis production
10. Production of biennial herbs: (Foeniculum vulgare, Digitalis lanata, Digitalis purpurea, Salvia sclarea).
11. Production of perennial herbs: (Mentha piperita, Lavandula angustifolia, Melissa officinalis).
12. Hyssopus officinalis, Thymus vulgaris, Levisticum officinale production.
13. Valeriana officinalis, Salvia officinalis production.
14. Papaver somniferum production.

Type of mid-term examination:
- Completing assignments
- Giving a short presentation

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids: lecture material

Recommended literature:

Hornok, L. (1992) Cultivation and Processing of Medicinal Plants. John Wiley & Sons Ltd, Baffins Lane, Chicester, UK 338. p. ISBN 0-471-92383-4

WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants. World Health Organization Geneva (2003)

REQUIREMENTS
2021/22 academic year I. semester

Name and code of the subject: Environmental Aspects of Food Processing MTMEL7023A
Name and title of the person responsible for the subject:
Additional instructors involved in teaching the subject: Prof Dr. János Tamás Professor
Name and level of the program: Food Safety and Quality Engineering MSc
Subject type: optional
Teaching timetable of the subject, type of examination: 3 K
Credit value of the subject: 4

Purpose of teaching the subject:

Content of the subject (14 weeks):

15. Basics of environmental status of a country. Definition, structure and development of environmental protection and environmental management. Natural resources and their types, continuous, non-renewable, and renewable natural resources. The concept of environment, its elements, pollution sources, causes, forms.
16. Air pollution and pollution control.
17. Soil contamination and degradation: soil contamination and contaminants, erosion.
18. Water pollution and protection against pollution. Water quality, water quality protection. The system of Water Management.
19. Noise and vibration protection.
20. Waste management: The concept of waste, its sources and effects.
21. International scope of agri-environmental management. Introduction of the Hungarian practice as an example.
22. The impact of agricultural production on the environment: environmental effects of plant production, environmental aspects of animal husbandry. Environmental impact assessments.
23. General environmental impacts of food production and processing.
24. Specific environmental effects of food production and processing I.
25. Specific environmental effects of food production and processing II.
26. Cleaner production techniques.
27. Environmental management systems.
28. Life cycle analysis. Environmental indicators. BAT (Best Available Techniques).

Type of mid-term examination: Active participation at the lessons is required.
Method of assessment (semester examination mark - report, practical grade, colloquium, examination): Written exam
Teaching aids:
Recommended literature:

1. J. C. Lovett- D. G. Ockwell.: 2010. A Handbook of Environmental Management.
2. J.M. Blais, M. Rosen, J.P. Smol.: 2015. Environmental Contaminants.
3. A. S. Kalamdhad, J. Singh, K. Dhamodharan.: 2016. Advances in Waste Management.
4. V. I. Grover.: 2006. Water: Global Common and Global Problems.

REQUIREMENTS
2021-2022 academic 1st year 2nd semester

Name and code of the subject: Nutritional genetics and genomics
Name and title of the person responsible for the subject: Dr. Endre Máthé, associate professor PhD
Additional instructors involved in teaching the subject: -
Name and level of the program: Food safety and quality engineering BSc, MSc
Subject type: szabadon valaszthato ; 2 lect. + 2 pract.
Teaching timetable of the subject, type of examination: 2nd semester, oral

Credit value of the subject: 3

Purpose of teaching the subject:
Students will understand and the structural and functional properties of eukaryotic cells, and will learn to analyse and interpret the spatial and temporal control of stochastic and determinative cellular phenomena in the context of cellular compartmentalization, cell cycle regulation, genomic integrity and evolution. Special emphasis will be put on topics like the nutrition and health/diseases type of correlations; the preventive and therapeutic nutrition; the functional and medical foods,

Content of the subject (14 weeks):
LECTURES:
1-2. Nutritional genetics and genomics. Concepts, research tools and expectations.
3-4. Epigenetics. Molecular targets for diet and chronic disease prevention. Diet influenced chromatin modifications and expression of chemopreventive genes.
5-6.Natural antioxidants and cellular mechanism of action.
7-8. Carbohydrate metabolism and its genetic control.
9-10. Nutrition and inflammatory response.
11-12. Genes, nutrition and metabolic syndrome.
13-14. Genes, nutrition and cancer.

PRACTICALS:
1-2. *Drosophila melanogaster* as a nutritional genetic research model system.
3-4. Studying plant extracts induced chromatin organization modifier effects
5-6. Evaluation of mutagenic effect using somatic mutation and recombination test.
7-8. Evaluation of Keap1/Nrf2/ARE mediated xenobiotic response induced by plant extracts.
9-10. Animal models for studying the metabolic syndrome.

Type of mid-term examination: participation in the practicals is mandatory. Attendance at 70% of the practicals is mandatory. In case of absence, a report must be submitted by the student within two weeks from the missed practice (theoretical and practical description).
Participation in the practicals is a precondition for the final exam.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids: lecture specific PPTs, research/review papers

Recommended literature:

• Aggarwal, B.B., Heber, D. (2014). Immunonutrition: Interactions of Diet, Genetics, and Inflammation. CRC Press, ISBN: 9781466503854.
• Bidlack, WR, Rodrigez, RL. (2012). Nutritional Genomics. The impact of dietary regulation of gene function on human disease. CRC Press, Taylor & Francis Group, Boca Raton, London, New York, ISBN: 978-1-4398-4452-6.
• Brigelius-Flohé R and Joost H-G. (2006). Nutritional Genomics. Impact on Health and Disease. Whiley-VCH Verlag GmbH&Co. KGaA. ISBN-10: 3-527-31294-3
• Fonyó, A. (2012). Élettan gyógyszerészhallgatók részére. Medicina Könyvkiadó Zrt. ISBN 978 963 226 393 9
• Graham, G., Kesten, D., Scherwitz, L. (2011). Pottenger's Prophecy: How Food Resets Genes for Wellness or Illness. ISBN: 978-1-935052.
• Kohlmeier, M. (2012). Nutrigenetics Applying the Science of Personal Nutrition. Academic Press. ISBN: 978-0-12-385900-6
• Lanham-New, S.A., Macdonald, I.A., Roche, H.M. (2010). Nutrition and Metabolism, 2nd Edition. Wiley-Blackwell. ISBN: 978-1-4051-6808-3
• Shanahan, C. and Shanahan, L. (2008). Deep Nutrition: Why Your Genes Need Traditional Food. ISBN-10: 0-615-22838-0.
• PUBMED database /Books:
- Pagon RA, Adam MP, Ardinger HH, et al., editors. (1993-2014). GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014.
- Making Sense of Your Genes: A Guide to Genetic Counselling. National Society of Genetic Counselors; Genetic Alliance. Washington (DC): Genetic Alliance; 2008.
- Integrating Large-Scale Genomic Information into Clinical Practice: Workshop Summary. Institute of Medicine (US). Washington (DC): National Academies Press (US); 2012.
- Benzie I.F.F. and Wachtel-Galor, S. (2011). Herbal Medicine, 2nd edition. CRC Press; ISBN-13: 978-1-4398-0713-2